

**THAT WHICH IS CLAIMED IS:**

1           1.     A method for enhancing vision in an eye, the method comprising:  
2                     determining an optical path difference between a plane wave and a  
3 wavefront emanating from an eye;  
4                     producing a plurality of laser beam shots;  
5                     applying said plurality of laser beam shots to the eye in a manner that is  
6 based in part on the optical path difference between the plane wave and the wavefront  
7 emanating from the eye; and  
8                     removing tissue from the cornea of the eye in a manner that reduces the  
9 optical path difference between the plane wave and the wavefront emanating from the  
10 eye; whereby visual defects of the eye are reduced.

1           2.     The method of claim 1 in which the size of a laser beam shot is less than  
2 about 1 mm.

1           3.     The method of claim 1 in which the size of a laser beam shot is less than  
2 about 0.5 mm.

1           4.     The method of claim 1 in which the size of the laser beam shots varies.

1           5.     The method of claim 1 in which the vision of the eye is enhanced from an  
2 eye requiring a correction of greater than -3 diopters to an eye having perfect vision.

1           6.     The method of claim 1 in which the vision of the eye is enhanced from an  
2 eye requiring a correction of greater than -3 diopters to an eye having about 20/20  
3 vision.

1           7.     The method of claim 1 in which the vision of the eye is enhanced from an  
2 eye requiring a correction of greater than -3 diopters to an eye having better than 20/20  
3 vision.

1           8.     The method of claim 1 in which the vision of the eye is enhanced from an  
2 eye requiring a correction of greater than -3 diopters to an eye having at least 20/10  
3 vision.

1           9.     The method of claim 1 in which the vision of the eye is enhanced from an  
2 eye requiring a correction of greater than -6 diopters to an eye having perfect vision.

1           10.    The method of claim 1 in which the vision of the eye is enhanced from an  
2 eye requiring a correction of greater than -6 diopters to an eye having about 20/20  
3 vision.

1           11.    The method of claim 1 in which the vision of the eye is enhanced from an  
2 eye requiring a correction of greater than -6 diopters to an eye having better than 20/20  
3 vision.

1           12.    The method of claim 1 in which the vision of the eye is enhanced from an  
2 eye requiring a correction of greater than -6 diopters to an eye having at least 20/10  
3 vision.

1           13.    The method of claim 1 in which the vision of the eye is enhanced from an  
2 eye requiring a correction of greater than -8 diopters to an eye having perfect vision.

1           14.    The method of claim 1 in which the vision of the eye is enhanced from an  
2 eye requiring a correction of greater than -8 diopters to an eye having about 20/40  
3 vision.

1           **15.**   The method of claim 1 in which the vision of the eye is enhanced from an  
2 eye requiring a correction of greater than -8 diopters to an eye having better than 20/40  
3 vision.

1           **16.**   The method of claim 1 in which the vision of the eye is enhanced from an  
2 eye requiring a correction of greater than -8 diopters to an eye having at least 20/20  
3 vision.

1           **17.**   The method of claim 1 in which the vision of the eye is enhanced from an  
2 eye requiring a correction of greater than 3 diopters to an eye having perfect vision.

1           **18.**   The method of claim 1 in which the vision of the eye is enhanced from an  
2 eye requiring a correction of greater than 3 diopters to an eye having about 20/20  
3 vision.

1           **19.**   The method of claim 1 in which the vision of the eye is enhanced from an  
2 eye requiring a correction of greater than 3 diopters to an eye having better than 20/20  
3 vision.

1           **20.**   The method of claim 1 in which the vision of the eye is enhanced from an  
2 eye requiring a correction of greater than 3 diopters to an eye having at least 20/10  
3 vision.

1           **21.**   The method of claim 1 in which the vision of the eye is enhanced from an  
2 eye requiring a correction of greater than 6 diopters to an eye having perfect vision.

1           **22.**   The method of claim 1 in which the vision of the eye is enhanced from an  
2 eye requiring a correction of greater than 6 diopters to an eye having about 20/20  
3 vision.

1           **23.**   The method of claim 1 in which the vision of the eye is enhanced from an  
2 eye requiring a correction of greater than 6 diopters to an eye having better than 20/20  
3 vision.

1           **24.**   The method of claim 1 in which the vision of the eye is enhanced from an  
2 eye requiring a correction of greater than 6 diopters to an eye having at least 20/10  
3 vision.

1           **25.**   The method of claim 1 in which the vision of the eye is enhanced from an  
2 eye requiring a correction of greater than 8 diopters to an eye having perfect vision.

1           **26.**   The method of claim 1 in which the vision of the eye is enhanced from an  
2 eye requiring a correction of greater than 8 diopters to an eye having about 20/40  
3 vision.

1           **27.**   The method of claim 1 in which the vision of the eye is enhanced from an  
2 eye requiring a correction of greater than 8 diopters to an eye having better than 20/40  
3 vision.

1           **28.**   The method of claim 1 in which the vision of the eye is enhanced from an  
2 eye requiring a correction of greater than 8 diopters to an eye having at least 20/20  
3 vision.

1           **29.**   A method for enhancing vision in an eye, the method comprising:  
2                   determining an optical path difference between a plane wave and a  
3 wavefront emanating from an eye;  
4                   producing a plurality of laser beam shots;  
5                   mechanically removing the epithelium of the eye to expose bowmans  
6 membrane;

7 applying said plurality of laser beam shots to the bowmans membrane in a  
8 manner that is based in part on the optical path difference between the plane wave and  
9 the wavefront emanating from the eye; and,

10 said plurality of laser beam shots removing tissue from the eye in a  
11 manner that reduces the optical path difference between the plane wave and the  
12 wavefront emanating from the eye; whereby the vision of the eye is improved.

1 **30.** The method of claim 29 in which the size of a laser beam shot is less than  
2 about 1 mm.

1 **31.** The method of claim 29 in which the size of a laser beam shot is less than  
2 about 0.5 mm.

**32.** The method of claim 29 in which the size of the laser beam shots varies.

**33.** The method of claim 29 in which the vision of the eye is enhanced from  
an eye requiring a correction of greater than -3 diopters to an eye having perfect vision.

**34.** The method of claim 29 in which the vision of the eye is enhanced from  
an eye requiring a correction of greater than -3 diopters to an eye having about 20/20  
vision.

1 **35.** The method of claim 29 in which the vision of the eye is enhanced from  
2 an eye requiring a correction of greater than -3 diopters to an eye having better than  
3 20/20 vision.

1 **36.** The method of claim 29 in which the vision of the eye is enhanced from  
2 an eye requiring a correction of greater than -3 diopters to an eye having at least 20/10  
3 vision.

1           **37.**    The method of claim 29 in which the vision of the eye is enhanced from  
2 an eye requiring a correction of greater than -6 diopters to an eye having perfect vision.

1           **38.**    The method of claim 29 in which the vision of the eye is enhanced from  
2 an eye requiring a correction of greater than -6 diopters to an eye having about 20/20  
3 vision.

1           **39.**    The method of claim 29 in which the vision of the eye is enhanced from  
2 an eye requiring a correction of greater than -6 diopters to an eye having better than  
3 20/20 vision.

1           **40.**    The method of claim 29 in which the vision of the eye is enhanced from  
2 an eye requiring a correction of greater than -6 diopters to an eye having at least 20/10  
3 vision.

1           **41.**    The method of claim 29 in which the vision of the eye is enhanced from  
2 an eye requiring a correction of greater than -8 diopters to an eye having perfect vision.

1           **42.**    The method of claim 29 in which the vision of the eye is enhanced from  
2 an eye requiring a correction of greater than -8 diopters to an eye having about 20/40  
3 vision.

1           **43.**    The method of claim 29 in which the vision of the eye is enhanced from  
2 an eye requiring a correction of greater than -8 diopters to an eye having better than  
3 20/40 vision.

1           **44.**    The method of claim 29 in which the vision of the eye is enhanced from  
2 an eye requiring a correction of greater than -8 diopters to an eye having at least 20/20  
3 vision.

1           **45.**   The method of claim 29 in which the vision of the eye is enhanced from  
2 an eye requiring a correction of greater than 3 diopters to an eye having perfect vision.

1           **46.**   The method of claim 29 in which the vision of the eye is enhanced from  
2 an eye requiring a correction of greater than 3 diopters to an eye having about 20/20  
3 vision.

1           **47.**   The method of claim 29 in which the vision of the eye is enhanced from  
2 an eye requiring a correction of greater than 3 diopters to an eye having better than  
3 20/20 vision.

1           **48.**   The method of claim 29 in which the vision of the eye is enhanced from  
2 an eye requiring a correction of greater than 3 diopters to an eye having at least 20/10  
3 vision.

1           **49.**   The method of claim 29 in which the vision of the eye is enhanced from  
2 an eye requiring a correction of greater than 6 diopters to an eye having perfect vision.

1           **50.**   The method of claim 29 in which the vision of the eye is enhanced from  
2 an eye requiring a correction of greater than 6 diopters to an eye having about 20/20  
3 vision.

1           **51.**   The method of claim 29 in which the vision of the eye is enhanced from  
2 an eye requiring a correction of greater than 6 diopters to an eye having better than  
3 20/20 vision.

1           **52.**   The method of claim 29 in which the vision of the eye is enhanced from  
2 an eye requiring a correction of greater than 6 diopters to an eye having at least 20/10  
3 vision.

1           **53.**    The method of claim 29 in which the vision of the eye is enhanced from  
2 an eye requiring a correction of greater than 8 diopters to an eye having perfect vision.

1           **54.**    The method of claim 29 in which the vision of the eye is enhanced from  
2 an eye requiring a correction of greater than 8 diopters to an eye having about 20/40  
3 vision.

1           **55.**    The method of claim 29 in which the vision of the eye is enhanced from  
2 an eye requiring a correction of greater than 8 diopters to an eye having better than  
3 20/40 vision.

1           **56.**    The method of claim 29 in which the vision of the eye is enhanced from  
2 an eye requiring a correction of greater than 8 diopters to an eye having at least 20/20  
3 vision.

1           **57.**    A method for enhancing vision in an eye, the method comprising:  
2                   determining an optical path difference between a plane wave and a  
3 wavefront emanating from an eye;  
4                   producing a plurality of laser beam shots;  
5                   displacing a portion of the eye to expose the stroma of the eye;  
6                   applying said plurality of laser beam shots to the exposed stroma in a  
7 manner that is based in part on the optical path difference between the plane wave and  
8 the wavefront emanating from the eye;  
9                   said plurality of laser beam shots removing tissue from the eye in a  
10 manner that reduces the optical path difference between the plane wave and the  
11 wavefront emanating from the eye; and,  
12                   replacing the displaced portion of the eye; whereby the vision of the eye is  
13 improved.



1           **58.**   The method of claim 57 in which the size of a laser beam shot is less than  
2           about 1 mm.

1           **59.**   The method of claim 57 in which the size of a laser beam shot is less than  
2           about 0.5 mm.

1           **60.**   The method of claim 57 in which the size of the laser beam shots varies.

1           **61.**   The method of claim 57 in which the vision of the eye is enhanced from  
2           an eye requiring a correction of greater than -3 diopters to an eye having perfect vision.

1           **62.**   The method of claim 57 in which the vision of the eye is enhanced from  
2           an eye requiring a correction of greater than -3 diopters to an eye having about 20/20  
3           vision.

1           **63.**   The method of claim 57 in which the vision of the eye is enhanced from  
2           an eye requiring a correction of greater than -3 diopters to an eye having better than  
3           20/20 vision.

1           **64.**   The method of claim 57 in which the vision of the eye is enhanced from  
2           an eye requiring a correction of greater than -3 diopters to an eye having at least 20/10  
3           vision.

1           **65.**   The method of claim 57 in which the vision of the eye is enhanced from  
2           an eye requiring a correction of greater than -6 diopters to an eye having perfect vision.

1           **66.**   The method of claim 57 in which the vision of the eye is enhanced from  
2           an eye requiring a correction of greater than -6 diopters to an eye having about 20/20  
3           vision.

1           **67.**    The method of claim 57 in which the vision of the eye is enhanced from  
2           an eye requiring a correction of greater than -6 diopters to an eye having better than  
3           20/20 vision.

1           **68.**    The method of claim 57 in which the vision of the eye is enhanced from  
2           an eye requiring a correction of greater than -6 diopters to an eye having at least 20/10  
3           vision.

1           **69.**    The method of claim 57 in which the vision of the eye is enhanced from  
2           an eye requiring a correction of greater than -8 diopters to an eye having perfect vision.

1           **70.**    The method of claim 57 in which the vision of the eye is enhanced from  
2           an eye requiring a correction of greater than -8 diopters to an eye having about 20/40  
3           vision.

1           **71.**    The method of claim 57 in which the vision of the eye is enhanced from  
2           an eye requiring a correction of greater than -8 diopters to an eye having better than  
3           20/40 vision.

1           **72.**    The method of claim 57 in which the vision of the eye is enhanced from  
2           an eye requiring a correction of greater than -8 diopters to an eye having at least 20/20  
3           vision.

1           **73.**    The method of claim 57 in which the vision of the eye is enhanced from  
2           an eye requiring a correction of greater than 3 diopters to an eye having perfect vision.

1           **74.**    The method of claim 57 in which the vision of the eye is enhanced from  
2           an eye requiring a correction of greater than 3 diopters to an eye having about 20/20  
3           vision.

1           **75.**   The method of claim 57 in which the vision of the eye is enhanced from  
2 an eye requiring a correction of greater than 3 diopters to an eye having better than  
3 20/20 vision.

1           **76.**   The method of claim 57 in which the vision of the eye is enhanced from  
2 an eye requiring a correction of greater than 3 diopters to an eye having at least 20/10  
3 vision.

1           **77.**   The method of claim 57 in which the vision of the eye is enhanced from  
2 an eye requiring a correction of greater than 6 diopters to an eye having perfect vision.

1           **78.**   The method of claim 57 in which the vision of the eye is enhanced from  
2 an eye requiring a correction of greater than 6 diopters to an eye having about 20/20  
3 vision.

1           **79.**   The method of claim 57 in which the vision of the eye is enhanced from  
2 an eye requiring a correction of greater than 6 diopters to an eye having better than  
3 20/20 vision.

1           **80.**   The method of claim 57 in which the vision of the eye is enhanced from  
2 an eye requiring a correction of greater than 6 diopters to an eye having at least 20/10  
3 vision.

1           **81.**   The method of claim 57 in which the vision of the eye is enhanced from  
2 an eye requiring a correction of greater than 8 diopters to an eye having perfect vision.

1           **82.**   The method of claim 57 in which the vision of the eye is enhanced from  
2 an eye requiring a correction of greater than 8 diopters to an eye having about 20/40  
3 vision.

1           **83.**   The method of claim 57 in which the vision of the eye is enhanced from  
2 an eye requiring a correction of greater than 8 diopters to an eye having better than  
3 20/40 vision.

1           **84.**   The method of claim 57 in which the vision of the eye is enhanced from  
2 an eye requiring a correction of greater than 8 diopters to an eye having at least 20/20  
3 vision.

1           **85.**   A method for enhancing vision in an eye, the method comprising:  
2               determining an optical path difference between a plane wave and a  
3 wavefront emanating from an eye;  
4               producing a plurality of laser beam shots;  
5               applying said plurality of laser beam shots to the eye in a manner to  
6 create two different focus zones and that is based in part on the optical path difference  
7 between the plane wave and the wavefront emanating from the eye; and,  
8               said plurality of laser beam shots removing tissue from the eye in a  
9 manner that reduces the optical path difference between the plane wave and the  
10 wavefront emanating from the eye; whereby the vision of the eye is improved.